

**METHODS AND APPARATUSES PROMOTING ADHESION OF
DIELECTRIC BARRIER FILM TO COPPER**

ABSTRACT OF THE DISCLOSURE

Adhesion between a copper metallization layer and a dielectric barrier film may be promoted by stabilizing a flow of a silicon-containing precursor in a divert line leading to the chamber exhaust. The stabilized gas flow is then introduced to the processing chamber to precisely form a silicide layer over the copper. This silicidation step creates a network of strong Cu-Si bonds that prevent delamination of the barrier layer, while not substantially altering the sheet resistance and other electrical properties of the resulting metallization structure.

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